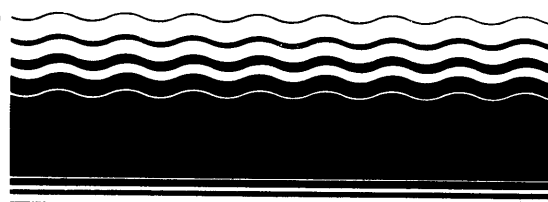




SITE

**SUPERFUND INNOVATIVE
TECHNOLOGY EVALUATION**



Demonstration Bulletin

The Pyretron Oxygen Burner

American Combustion Technologies, Inc.

TECHNOLOGY DESCRIPTION: The Pyretron is a burner which is designed to allow for the injection of oxygen into the combustion air stream for the purpose of increasing the efficiency of a hazardous waste incinerator. The SITE demonstration of the Pyretron took place at the U.S. EPA's Combustion Research Facility (CRF) in Jefferson, Arkansas from November 16, 1987 to January 29, 1988. Two Pyretron burners were installed on the Rotary Kiln System (RKS) at the CRF for the demonstration. One was installed on the kiln and one on the afterburner. Valve trains for supplying these burners with controllable flows of auxiliary fuel, oxygen, and air; and a computerized process control system were also provided.

A schematic of the system as it was installed at the CRF is shown in Figure 1. The Pyretron burners use the staged introduction of oxygen to produce a hot luminous flame which efficiently transfers heat to the solid waste which is fed separately to the kiln. Oxygen, propane and oxygen-enriched air enter the burner in three separate streams each concentric to one another. A stream of pure oxygen is fed through the center of the burner and is used to burn propane in a substoichiometric manner. This produces a hot and luminous flame. Combustion is completed by mixing these hot combustion products with the stream of oxygen-enriched air.

The system consists of an 880 KW (3MM BTU/hr) rotary kiln incinerator, a transition section, a fired afterburner chamber, a venturi-scrubber and a packed-column scrubber. In addition, a backup air pollution control system consisting of a carbon-bed adsorber and a HEPA filter is installed downstream of the previously mentioned air pollution control devices. With the exception of the carbon bed and HEPA filter, the system is typical of what might exist on an actual

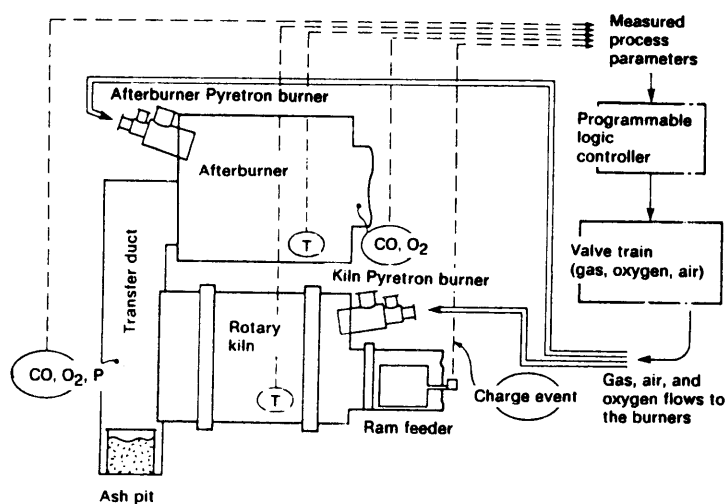


Figure 1. Pyretron thermal destruction system process diagram.

commercial or industrial incinerator. The carbon bed and HEPA filter are installed to ensure organic compound and particulate emissions to the atmosphere are negligible.

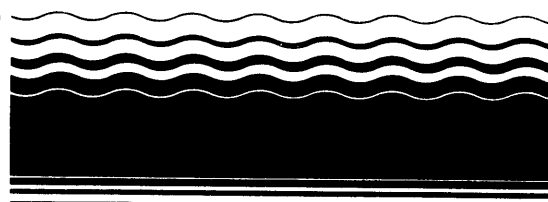
WASTE APPLICABILITY: This technology is suitable for almost any waste under consideration for conventional incineration. Nitrogen containing wastes should not be treated in an incinerator equipped with a Pyretron because of the potential for forming and emitting high levels of NO_x .

DEMONSTRATION RESULTS: The waste incinerated during the SITE demonstration was a mixture of 60% decanter tank tar sludge from coking operations (RCRA listed waste KO87) and 40% contaminated soil from the Stringfellow Superfund site. The KO87 waste was included in the test mixture



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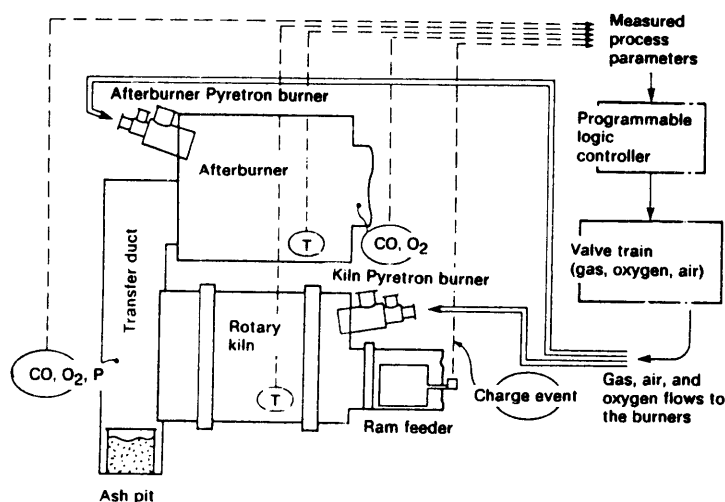


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